

AMENDMENTS TO CLAIMS

- Please amend pending claims 1, 6, 11, and 16 as indicated below. A complete listing of all claims and their status in the application are as follows:

1. (currently amended) A method for measuring jitter on a data signal, comprising:

inputting a data signal under test to digitally generate data signal transition locations
in the delay elements of a delay line;

determining the ΔT time delays of the delay elements without using a data signal under test;

digitally latching a data signal transition location using a stable sampling clock signal
and only the output of the delay line;

digitally converting the data signal transition location to a delay time value output that
is the ΔT time delays of the corresponding delay elements;

digitally converting the delay time value output to an edge position output; and

digitally detecting a value of the edge position output.

2. (original) The method of claim 1 further comprising filtering the edge position output prior to detecting a value of the edge position output.

3. (original) The method of claim 1 further comprising adding a dither signal to the signal under test prior to inputting the signal under test to generate signal transition locations.

4. (original) The method of claim 1 further comprising analyzing the edge position output to determine edge position movement in excess of a predetermined magnitude.

5. (original) The method of claim 1 further comprising analyzing the edge position output to provide a root mean square value thereof.

6. (currently amended) A method for measuring jitter on a data signal, comprising:

inputting a data signal under test to digitally generate data signal transition locations
in the delay elements of a delay line;

determining the ΔT time delays of the delay elements without using a data signal under test;

digitally latching a data signal transition location using a stable sampling clock signal and only the output of the delay line;

digitally converting the data signal transition location to a delay time value output that is the ΔT time delays of the corresponding delay elements;

digitally converting the delay time value output to an edge position output using the sampling clock signal;

digitally detecting peak-to-peak values of the edge positions; and

outputting the detected peak-to-peak values of the edge positions.

7. (original) The method of claim 6 further comprising filtering the edge position outputs prior to detecting peak-to-peak values of the edge position outputs.

8. (original) The method of claim 6 further comprising adding a dither signal to the data signal under test prior to inputting the data signal under test.

9. (original) The method of claim 6 further comprising analyzing the edge position output to determine edge position movement in excess of a predetermined unit interval magnitude.

10. (original) The method of claim 6 further comprising analyzing the edge position output to provide a root mean square value thereof.

11. (currently amended) Apparatus for measuring jitter on a data signal, comprising:

a tapped delay line having delay elements for digitally generating data signal transition locations therein from a data signal under test inputted thereinto;

circuitry including a calibrator for determining the ΔT time delays of the delay elements without using a data signal under test;

a stable sampling clock signal;

a sample register connected for digitally latching a data signal transition location therein in response to the stable sampling clock signal and only the output of the delay line;

a priority encoder connected for digitally converting the data signal transition location to a delay time value output that is the ΔT time delays of the corresponding delay elements;

a converter connected for digitally converting the delay time value output to an edge position output; and

a peak-to-peak detector connected for digitally detecting values of the edge positions.

12. (original) The apparatus of claim 11 further comprising a digital signal processing filter connected for filtering the edge position output prior to the peak-to-peak detector detecting values of the edge positions.

13. (original) The apparatus of claim 11 further comprising a dither unit connected for adding a dither signal to a signal under test prior to the signal under test being inputted into the tapped delay line.

14. (original) The apparatus of claim 11 further comprising an over-range detector connected for analyzing the edge position output to report edge position movement in excess of a predetermined magnitude.

15. (original) The apparatus of claim 11 further comprising a block that:
performs root mean square measurement calculations; and
is connected for analyzing the edge position output to provide a root mean square value thereof.

16. (currently amended) Apparatus for measuring jitter on a data signal, comprising:

a field programmable gate array carry chain;

a tapped delay line, having delay elements, that is implemented in the field programmable gate array carry chain for digitally generating data signal transition locations therein from a data signal under test inputted thereinto;

circuitry including a calibrator for determining the ΔT time delays of the delay elements without using a data signal under test;

a stable sampling clock signal;

- a sample register connected for digitally latching a data signal transition location therein in response to the stable sampling clock signal and only the output of the delay line;
- a priority encoder connected for digitally converting the data signal transition location to a delay time value output that is the ΔT time delays of the corresponding delay elements;
- a converter for digitally converting clock and delay time value output to time values and connected for digitally converting the delay time value output to an edge position output; and
- a peak-to-peak detector connected for digitally detecting and outputting peak-to-peak values of the edge positions.

17. (original) The apparatus of claim 16 further comprising digital signal processing filters connected for filtering the edge position output prior to the peak-to-peak detector detecting peak-to-peak values of the edge positions.

18. (original) The apparatus of claim 16 further comprising a dither unit connected for adding a dither signal to a data signal under test prior to the data signal under test being inputted into the tapped delay line.

19. (original) The apparatus of claim 16 further comprising an over-range detector connected for analyzing the edge position output to report edge position movement in excess of a predetermined unit interval magnitude.

20. (original) The apparatus of claim 16 further comprising a block that:
performs root mean square measurement calculations; and
is connected for analyzing the edge position output to provide a root mean square value thereof.